STATE OF CALIFORNIA
Department of General Services - Office of Procurement
PURCHASE ORDER

Form GSOP 1-PIN (04/98)

Purchase Order No.	Rev.	Date
62410		6/30/2009

Supplier No.	Solicitation No.	Delivery Date	FOB Point	Invoice Terms
798322	57440	210 Days ARO	Destination	

PAPE' MACHINERY, INC.
2850 EL CENTRO ROAD
SACRAMENTO, CA 95833
Attn: DAVID CONGER

Phone: 916-922-7181

Ship To: DEPT PARKS & RECREATION
3930 SEAPORT BLVD
WEST SACRAMENTO, CA 95691
Attn: C. BELLTAWN 916/375-6828

Charge To: PARKS & RECREATION A-50
1416 NINTH ST. RM 1052
SACRAMENTO, CA 95814

Agency Billing	Agency Purchase Estimate	Purchase Estimate	Revision
53940	E08K0005	67580	0

Agency Contact	Phone	Date Received
CASE BELLTAWN	916-870-9121	

Item No.	Quantity	Unit	Commodity Code	Description	Unit Price	Extension
1	1	EA	3805-380-0400-8	GRADER ARTICULATED FRAME (AS DESCRIBED)	176,860.0000	176,860.00

THE GENERAL PROVISIONS FOR NON-IT COMMODITIES ARE HEREBY INCORPORATED BY REFERENCE. THESE GENERAL PROVISIONS CAN BE OBTAINED BY PHONING (916) 375-4400 OR BY ACCESSING OUR WEBSITE AT: www.documents.dgs.ca.gov/pd/modellang/GPnonIT0407.pdf

THE FOLLOWING INFORMATION IS PROVIDED FOR AGENCY USE ONLY:
PRIME CONTRACTOR: NS
FISCAL YEAR: 2008/2009

Grader, Articulating Frame, Six Wheel/AWD,12 Foot Moldboard as described meeting the requirements of Specification # 3805-0865 of ten,(10) pages, dated July 06, 2009.

Proposed Brand: John Deere

Model: 672G

Total Value: 176,860.00

F.O.B. Destination
For the purpose of this order only F.O.B. Destination will be accepted.

PRECONSTRUCTION CONFERENCE
A preconstruction conference shall be held between the State and contractor within 15 calendar days after formal award of the purchase order. This conference shall be held prior to the start of any construction. The purpose of this meeting is to review specifications, resolve any questions concerning the specifications and/or variations of the chassis.

Contact:
Department of Parks and Recreation
3930 Seaport Blvd
West Sacramento, CA 95691
Contact: Case Belltawn
Phone. (916) 870-9121

Sales and/or use tax to be extra unless noted above

Buyer	Phone	BOC Number
LONNIE WILLIAMS	916-375-4586	

STATE OF CALIFORNIA
Department of General Services - Office of Procurement

PURCHASE ORDER CONTINUATION

Form GSOP 2-PIN (04/98)

Purchase Order No.	*Revision*	*Date*	*Supplier No.*	*Supplier Name*
62410		6/30/2009	798322	PAPE' MACHINERY, INC.

Item No.	*Quantity*	*Unit*	*Commodity Code*	*Description*	*Unit Price*	*Extension*

PRE-DELIVERY CHECKLIST
Prior to delivery, the vehicle shall be completely inspected and service by the delivering dealer and/ or the manufacturer's pre-delivery service center. A copy of the pre-delivery service checklist shall be completed for each vehicle, signed by a representative of the organization performing the inspection/service and delivered with the vehicle.

PREPARATION FOR DELIVERY
The completed vehicle as presented for the "final" acceptance shall be cleaned, internally and externally (freshly washed and chamois) and delivered full of fuel and with a full charge to the battery system.

RECEIVING INSPECTION
The grader shall be inspected for compliance with the bid specifications by a Department of General Services inspector at the vendor's place of business, prior to delivery. It shall be the responsibility of the vendor to ask for the inspection when the vehicle is ready for delivery.

REGISTRATION
The original dealer's "Report of Sale" shall be furnished by all California licensed dealers at the time of delivery of each unit or units covered by these specifications. A "Manufacturer's Statement of Origin" and original "Bill of Sale" on the vendor's letterhead may be supplied for each unit in lieu of a dealer's Report of Sale, if the supplier is not a registered California dealer. An original weight certificate from a California Weigh Master for registration purposes must be supplied at the time of delivery of each unit. A Federal Excise Tax Exempt Certificate will be attached to the purchase order.

All documentation supplied for registration shall contain the following physical address:

California State Parks
1416 9th Street
Sacramento, CA 95814

All required documentation shall be sent to the above addresses by the the time of delivery.

NOTE: The State shall register/license all vehicles with the Department of Motor Vehicles.

DELIVERY
Grader shall be delivered completely assembled and ready to operate.

Delivery is to be completed in full within 210 days ARO.

Delivery to be made during normal business hours Monday through Friday, 8:00am-12:00pm or 1:00pm-4:00pm, except State Holidays.

The Grader is to be delivered to the following address:

Department of Parks and Recreation
3930 Seaport Blvd
West Sacramento, CA 95691
Contact: Case Belltawn
Phone. (916) 870-9121

DOCUMENTATION:
The following documents shall be delivered to the consignee (receiving agency) with the vehicle:
1.) Completed and signed pre-delivery inspection checklist, including the purchase order number and vehicle ID.

2.) "Line Set Tickets" or "Window Sticker" showing all options installed.

STATE OF CALIFORNIA
Department of General Services - Office of Procurement

PURCHASE ORDER CONTINUATION

Form GSOP 2-PIN (04/98)

Purchase Order No.	Revision	Date	Supplier No.	Supplier Name
62410		6/30/2009	798322	PAPE' MACHINERY, INC.

Item No.	Quantity	Unit	Commodity Code	Description	Unit Price	Extension

Note:
In accordance with paragraph 15 of the General Provisions entitled "Delivery", the contractor shall strictly adhere to the delivery terms and completion schedule as as specified in this solicitation. Failure to comply with the delivery requirements, as stated, may be considered a breach of contract and subject the contractor to General Provisions 26, entitled "Rights and Remedies of the State for Default".

WARRANTY / PARTS / SERVICE

The system shall be fully warranted by the successful bidder to be free from defects in materials and workmanship, including but not limited to the chassis, engine, drive train, electrical system and all modifications made to the unit prior to delivery, etc., shall be covered (parts and labor) under a factory authorized extended warranty for one (1) year or 500 engine hours, whichever occurs first, following the date the Department puts the unit into service. The Department will notify the supplier by mail of the in-service date and keep a record of the in-service date.

The warranty shall cover 100 percent parts and labor of all repair costs, the entire unit, including modifications and any optional equipment or accessories being supplied. A copy of the manufacturer's warranty for the unit and any accessory or optional equipment shall be supplied with each unit.

Warranty repair service not performed within 5 working days of entering the shop.
If repairs have not been made by the sixth (6) working day, a loaner unit, of equal or greater capacity, shall be made available for use by Parks until the parts have been delivered.

Warranty replacement of engine, transmission or complete axle assemblies not performed within 15 working days of entering the shop.

If repairs have not been made by the sixteenth (16) working day, a loaner unit, of equal or greater capacity, shall be made available for use by Parks.

All OEM parts shall be available within five (5) working days from the date of order.
If parts are not available by the sixth (6) working days, a loaner unit, of equal or greater capacity, shall be made available for use by Parks until the parts have been delivered.

NOTE:
All parts expediting fees required to maintain these performance levels shall be covered by the warranty and not charged to Parks.

MANUALS

One (1) set of standard operator's manual, complete lubrication instructions, parts books and shop repair manuals, (complete with electrical and hydraulic schematics) shall be supplied with each unit. On receipt of the first unit, one (1) additional set of manuals shall be supplied for the State files.

TRAINING

The supplier, at his expense, shall provide a qualified factory authorized service representative to provide training for operators, mechanics, and parts personnel. This training (not a sales presentation) shall consist of hands on operation, safety, service and adjustments for the operators; mechanical repair and adjustment specifications for the shop and field mechanics; parts manual orientation, nomenclature and ordering procedures for parts personnel. It shall also cover lubrication and servicing The training shall be provided at the Anza Borrego,California at or within 100 miles of this location. This training shall be for one (1) 8 hour day (or longer as the supplier or State deems necessary), and the date(s) of the training will be arranged with Parks. The full cost of this service shall be included in the bid. All training shall be accomplished within 45 days of acceptance and receipt of the unit.

STATE OF CALIFORNIA
Department of General Services - Office of Procurement

PURCHASE ORDER CONTINUATION

Form GSOP 2-PIN (04/98)

Purchase Order No.	*Revision*	*Date*	*Supplier No.*	*Supplier Name*
62410		6/30/2009	798322	PAPE' MACHINERY, INC.

Item No.	*Quantity*	*Unit*	*Commodity Code*	*Description*	*Unit Price*	*Extension*

CALIFORNIA EMISSIONS CERTIFICATION
The vehicle shall meet all current Federal emissions requirements without credits at time of manufacture.

An original weight certificate from a California certified Weigh Master for registration purposes must be supplied at the time of delivery of each unit.

CALIFORNIA VEHICLE CODE
Contractor shall comply with all provisions of the California Vehicle Code pertaining to occupational licensing requirements for vehicle dealers, manufacturers, etc.

FEDERAL EXCISE CERTIFICATE
Federal Excise Tax Exemption Certificate will be attached to purchase order.

ATTACHMENTS
The following documents are attached and part of this purchase order.
1. Specification # 3805-0865 of ten (10) pages, dated July 6, 2009.

SCPRS
This Purchase order has been registered into the state contact and procurement registration system (https://www.scprs.dgs.ca.gov/). The registration number is ep1028625.

AWARD DATE
This purchase order is being awarded on September 03, 2009 pursuant to Government Code Section 13332.17. Any encumbrances made pursuant to this purchase order shall be construed to have been made on the last day of the preceding fiscal year.

CHANGE ORDERS
This Purchase Order may be amended, modified, or terminated at any time by mutual agreement of the parties in writing. Change orders amending, modifying or terminating the Purchase Order, including any modifications of the compensation payable may be issued only by the State Procurement Officer. All such change orders shall be in writing and issued only upon written concurrence of the supplier. Termination, as that term is used in this section, does not include termination for default of the supplier.

1. SCOPE

This specification establishes the minimum requirements for a six wheel, front wheel and articulated steer, all wheel drive motor grader equipped with rear rippers and 12 foot (ft.) blade. These specifications are written in accordance with SAE J1057, J870, and J1234 standards referencing identification terminology, component nomenclature, and specification definitions for graders.

2. TECHNICAL SPECIFICATIONS

2.1 **Weight:** The SAE operating weight of the base unit with standard equipment, fully enclosed ROPS cab, rear parallelogram rippers, and equipped with 14.00-24, 12PR tires, less optional counterweights, shall not be less than 31,000 pounds.

2.2 **Dimensions:** The following vehicle dimensions are given to insure proper vehicle configuration, use, transport, and storage. All dimensional requirements shall be applicable to the grader equipped with the tires and wheels specified in Tires and Wheels, Section 2.8 of this specification.

2.2.1 Vehicle Length ≤ 29 ft.2"

2.2.2 Overall Vehicle Height ≤ 11 ft.

2.2.3 Overall Vehicle Width (without blade) ≤ 102 in.

2.2.4 Tread Width ≥ 6 ft.

2.2.5 Wheelbase ≥ 232 in.

2.2.6 Tandem Center Distance: 59.5" minimum

2.2.7 Ground Clearance @ front axle ≥ 18 in.

2.3 **Engine:** The engine shall be a variable horsepower, turbo charged diesel engine with a minimum SAE J1349 net brake power rating ≥148 horsepower (hp) in 1st gear and ≥180 hp in high gear (4-8). The net torque rating shall exceed 540 ft.-lbs. The turbo charged engine shall maintain the manufacturers' specified power and torque ratings to a minimum of 7,000 ft above sea level. An altitude compensated diesel engine will not be acceptable. The engine shall be CARB certified, Tier 3 minimum. Emissions equipment shall be warranted by the grader manufacturer for a minimum of 5 years.

The engine shall be equipped with, but not limited to, the following accessories:

2.3.1 Hand throttle control or electric throttle with toggle switch adjustment.

2.3.2 Decelerator pedal or a throttle resume feature.

2.3.3 Starting aid: A cold weather starting aid as recommended by the engine manufacturer.

2.3.4 Electric start and shutoff; key type or touch pad with security codes.

2.3.5 Engine hood and side panels with locking capability.

2.4 **Operating Station:**

The grader's operating station shall be equipped with, but not limited to, the following engine monitoring instrumentation:

2.4.1 Transmission oil temperature gauge

2.4.2 Engine coolant temperature gauge

2.4.3 Engine oil pressure gauge

2.4.4 Hydraulic oil temperature gauge or high temperature indicator

2.4.5 Voltmeter.

The grader may be equipped with an electronic monitor and alarm system in lieu of the previously mentioned analog gauges (items 2.4.1 to 2.4.5). If an electronic monitor and alarm system is supplied, the electronic monitor system shall monitor, as a minimum, the following engine and equipment conditions:

2.4.6 Engine oil pressure

2.4.7 Engine coolant temperature

2.4.8 Transmission oil temperature

2.4.9 Hydraulic oil temperature

2.4.10 Alternator voltage

2.4.11 Transmission oil filter

2.4.12 Hydraulic oil filter.

The grader shall also be equipped with visual and auditory warning devices to alert the operator of conditions critical-to-engine and equipment operation. These warning lights and sounding devices shall have their own source for actuation, rather than being dependent on another instrument. Warning lights shall be bright enough to stand out during all operating conditions and audible signals shall be distinguishable from the operating noises of the vehicle.

Critical engine and equipment operation conditions for which visual and auditory warning devices are required shall include the following:

2.4.13 Low engine oil pressure

2.4.14 High engine coolant temperature

2.4.15 High transmission oil temperature.

NOTE: A gauge is not an acceptable visual warning device unless it is accompanied by a red light which illuminates or flashes upon reaching a critical engine condition.

In addition to all of the above, the grader shall also be equipped with the following engine monitoring instrumentation:

2.4.16 Engine tachometer

2.4.17 Fuel level gauge

2.4.18 Engine hour meter, electronic-solid state

All engine monitoring instrumentation and warning devices shall be permanently labeled to identify their functions with a simple and readable lettering style or equivalent international symbols.

Instrument arrangement should consist of subgroups monitoring the engine, operational, and power train performance. Grouped gauges shall be consistent in size, color scheme, pointer design, and label style and size. All gauges and instrumentation shall be backlit or adequately illuminated for nighttime operation.

2.4 **Transmission:** The transmission shall:

2.4.1 Be a power shift type

2.4.2 Have ≥ 8 forward speeds

2.4.3 Have ≥ 6 reverse speeds

2.4.4 Be driven by either a torque converter, or direct drive coupling with an inching control. If the transmission is driven by a torque converter, the engine power rating specified in Section 2.3 shall be increased a minimum of 3 hp to compensate for the power loss inherent with fluid power transmission.

2.4.5 Be equipped with electronically controlled shifting.

2.4.6 Have neutral locking capability that will, in the event the transmission is engaged, prevent the engine from starting or prevent the machine from moving if the engine is started.

The grader shall be capable of traveling at ≥ 24 mph when in the highest forward gear.

2.5 **Axles and Drives:** The rear axles shall be tandem drive axles. The tandem axles shall be driven by roller chains and sprockets enclosed within a housing partially filled with lubricating oil. The drive to the tandem axles shall be through a differential assembly with no-spin or lockup capability. A torque-proportioning differential will not be acceptable.

The grader shall be equipped with front wheel drive. The front wheel drive shall have controls to allow the operator to engage and disengage the front wheel drive from inside the cab.

A hydrostatic front wheel drive system shall be capable of providing torque on the front wheels at ground speeds up to 6.8mph. The hydrostatic drive shall be capable of changing operational modes of traction from a normal traction mode to an aggressive traction mode. The aggressive operational mode of traction shall provide adequate torque to stabilize the steering of the front wheels while operating the grader under extremely poor traction conditions.

The front axle shall be capable of leaning the front wheels, from their vertical center line, a minimum of 15° to either side for a total wheel lean of 30°. The front axle shall also be capable of oscillating from its horizontal center line, a minimum of 15° in either direction (up or down) for a total front axle oscillation angle of not less than 30°.

2.6 **Steering:** The grader shall employ front wheel steering and vehicle articulation as a means of steering. Front wheel steering shall be controlled using an electric over hydraulic joystick or a steering wheel with tilt and shall provide hydraulic power assist or full hydraulic steering. Vehicle articulation shall be hydraulically actuated which may be accomplished through electric over hydraulic means such as a joystick.

The front wheels shall have a minimum steering angle of 36° to either side for a total steering angle of not less than 72°. The grader shall articulate a minimum of 20° in either direction for a total articulation angle of not less than 40°. An articulation indicator shall be installed with appropriate markings to indicate the level of articulation. The indicator shall be readily visible to the operator while seated in the operator's seat. The grader shall provide a minimum turning radius of not greater than 26 ft.

An emergency (auxiliary) steering system shall be provided to allow the operator to continue maintaining steering control in the event of an engine or steering

power source failure. The emergency steering system shall meet the performance requirements as established by SAE J1511, "Steering of Off-Road, Rubber-Tired Machines".

The steering system shall be equipped with an articulated steering frame lock to prevent accidental machine articulation during shipment or maintenance.

2.7 **Brakes:** The service brakes shall be power-assisted or power-actuated and installed to apply braking force on all four rear wheels. The service brakes shall be foot-operated and shall be effective on each of the tandem drive wheels. Power-assisted hydraulic brakes may be equipped with either air or hydraulic type booster system. A power-actuated braking system may be either air or hydraulically actuated. An air dryer system shall be included for graders with air brakes.

The service brakes shall be self-adjusting, sealed and immersed in oil to protect against the influence of dust, mud, water, or snow (e.g., wet-disk brakes). All external brake lines shall be protected/shielded from external impacts or pinching caused by tire chains, pry bars, rocks, etc.

A service braking system utilizing stored energy shall be equipped with a dash mounted gauge and a warning device which actuates before system energy drops below 50% of the manufacturers specified maximum operating energy level. The warning device shall be readily visible and audible to the operator, and provide continuous warning. A gauge is not an acceptable visual warning device.

An emergency (auxiliary) braking system shall be installed to allow the operator to stop the machine in the event of any single failure in the service braking system. The emergency system shall be capable of being applied by a person seated in the operator's seat. In addition to the manual control, the emergency stopping system may also be applied automatically. If an automatic emergency stopping system is used, the automatic application shall occur only after a warning device is actuated.

Hydraulically boosted or hydraulically actuated braking systems shall incorporate an emergency hydraulic power braking source (e.g., auxiliary pump) that is automatically activated in the event of an engine failure. Hydraulic accumulators in conformance with SAE J1473 - Braking Performance requirements will be an acceptable emergency power braking source.

A parking brake shall be installed and may be connected to the service brakes or operated independently on the drive shaft or transmission output shaft. A red warning light shall be installed on the instrument panel, in full view of the operator, to indicate if the parking brake is applied while the engine is running.

The service brakes, emergency brakes, and parking brake shall conform with the braking performance requirements as established by SAE J1473 Standard - "Braking Performance - Rubber-Tired Earthmoving Machines".

2.8 **Tires and Wheels:** The grader shall be equipped with 14.00R24, 12PR, tubeless radial tires on all wheels. (Ref: Michelin XMPS or XSNOPLUS or G2 GP Radial, other tires may be acceptable based upon industry availability and approval of the Specification Engineer.) The rim shall be as recommended by the tire manufacturer, all rims shall be the same size. All six tires and wheels

shall mount to the axles with a minimum 3.0 inch side and 4.0 inch circumference tire clearance to allow for the installation and use of tire chains. All dimensional requirements shall be applicable to the grader equipped with these specified tires and wheels when inflated to the tire manufacturer's recommended pressure for grader applications.

Air and Oil Filtration: The engine air filtration system shall be a 2-stage unit consisting of a centrifugal pre-cleaner stage and two replaceable, dry element type, final stage filters. The centrifuging action pre-cleaner shall be capable of removing coarse dust and moisture. The air cleaner assembly shall also be equipped with a dust and water evacuator. The two replaceable, dry element type, final stage filters shall consist of an outer primary filter and an inner safety element of the correct capacity as indicated in the engine manufacturer's published instructions.

An engine air intake restriction gauge shall be located either in the cab and mounted in the instrument panel or be visible during operator's pre-operational check. The gauge shall be marked to indicate maximum restriction in accordance with the engine manufacturer's published instructions. The restriction gauge shall maintain the last highest vacuum reading when the engine is turned off and, upon air filter replacement, will reset to zero (Ref., Filter Minder Dash Mount Air Restriction Gauge, Model 3781-325 or comparable). The air cleaner/gauge connections shall be dustproof and waterproof, either tubing or hose routed, as to withstand abrasion, wear, and vibration. The gauge suction line shall incorporate an in-line filter to protect against dust intake due to a cracked or broken connection.

The engine oil filtration system shall utilize full flow filtration with a replaceable element, spin-on type filter of the correct capacity as indicated in the engine manufacturer's published instructions.

2.9 **Exhaust System:** The exhaust system shall utilize a vertical exhaust stack. A rain cap may be provided if it is compatible with the required emission devices provided. The exhaust stack shall be constructed so as to restrict rain from entering the exhaust system and wind from turning the turbo charger. This can be through use of a rain cap if compatible with the exhaust system or through an after treatment device (muffler) that restricts airflow back through the system in conjunction with a drain. Other methods maybe acceptable with prior approval from the Specifications Engineer. A simple elbow in the system does not perform the required function and will not be acceptable. The exhaust system shall comply with applicable California Vehicle Code and State fire regulations. Exhaust emitted by each unit shall comply with California emission requirements at the time of purchase.

2.10 **Electrical System:** The grader shall be equipped with the following minimum electrical components:

- 2.10.1 Two multiple beam front driving lights (halogen)
- 2.10.2 Two front and two rear work lights (halogen)
- 2.10.3 Rear tail and stop lights
- 2.10.4 Front and rear mounted turn signals
- 2.10.5 License plate lamp with bracket
- 2.10.6 Cab dome light

2.10.7 Electronic backup alarm (Shall sound whenever gear selector is in reverse.)
2.10.8 Horn
2.10.9 Backup light
2.10.10 Master battery shut-off switch (either keyed or inside a lockable compartment).

Minimum electrical equipment shall comply with all Federal and State regulations. The tail, stop, and directional signal lamps may be in combination. The wires to these lamps shall be in a loom, conduit, or wrapped with electrical tape. Adequate size gauge of wire to the lights shall be used in accordance with SAE standards for distance from power source and load demand. Wiring color code for lights shall comply with SAE standard J560(b). The ends of all stranded conductors cut shall be mechanically stripped and fitted with insulated type terminals. The terminals shall be mechanically crimped securely with appropriate tool(s). All splices shall be sealed against moisture. Scotch Lock wire-type piercing devices shall not be used.

In addition to the mentioned lighting system, the unit shall be equipped with side and rear reflectors or reflector tape in accordance with FMVSS requirements.

The battery system shall be made up of one or two (2) heavy duty, sealed 12-volt batteries (Ref. Delco's Heavy Duty "freedom" 1110 series, Champion's Heavy Duty PC series, or comparable). (The following requirements shall be doubled if only one battery is used.) Each battery shall be not less than 700 CCA (cold cranking amps) at 0° F. and a reserve capacity of not less than 160 minutes at 25 amps and 80° F. The battery system ratings shall be as established by the BCI (Battery Council International) and SAE. Side terminal batteries are not acceptable.

A 24 V system for starting and operating the engine and equipment may be supplied if necessary. A minimum 90 amp alternator with a matching regulator shall be furnished with a 12-volt operating system. A minimum 45 amp alternator with a matching regulator shall be furnished with a 24-volt operating system.

2.11 **Hydraulics:** The hydraulic system shall incorporate full flow filtration, utilizing a replaceable element, spin-on type filter(s) with filtering capability of 25 microns or less. The hydraulic pump shall be of sufficient capacity to permit the simultaneous operation of at least two controls. All hydraulic hoses, lines, and fittings shall be SAE compatible. All hoses shall be the high pressure, crimp type and shall be properly protected and routed to eliminate failure due to abrasion, cutting, kinking, etc. Black pipe, galvanized pipe and pipe fittings shall not be used in the hydraulic system. Fittings and valves shall be of the proper size to match the hydraulic line to which they are attached. Compression fittings shall not be used. All threads shall be North American or metric type threads. Threads shall be of one type and not be mixed, British, etc. threads are not acceptable.

2.12 **Equipment:**

Blade Assembly: The dimensions of the moldboard shall not be less than 12 ft. x 24 inch x .75 inch. The moldboard cutting edge shall conform to the requirements as established by SAE J739b and SAE J740b Standards. The

blade shall be furnished with hydraulically actuated lift, tilt, and side shift capabilities.

The blade sliding side shift and circle centershift shall accommodate a minimum outside reach of 6 ft. beyond the rear tires to either side of the grader with a straight, non-articulated frame. The blade shall have a minimum lift (clearance) of 18 in. and a minimum depth (penetration) of 12 in. for a total vertical travel of not less than 30 in.

The circle shall be capable of rotating 360° and shall be hydraulically powered. The circle drive shall incorporate a slip clutch to protect against blade impact damage. The circle side shift shall allow the moldboard to be rotated from its normal horizontal position to a vertical, bank cutting position, 90° from ground level, on both the left and right sides of the motor grader.

The blade assembly shall be equipped with accumulators in the hydraulic lift circuit to cushion the blade from minor impacts and absorb any pressure spikes therein created.

Front Push Plate and Weight: The front of the headboard shall have a push plate counter weight combination installed with a minimum weight of 1800 lbs.

Operator's Compartment: The operator's compartment shall be fully enclosed and equipped with safety glass windows and key type locking doors. The cab shall be constructed to afford the operator visibility throughout the entire operation. The cab shall be equipped with:

1) Deluxe, fully padded, fully adjustable (fore and aft) suspension seat, with backrest and headrest (a highback seat is acceptable).
2) Industrial type seat belt
3) Recirculating type heater with front and rear window defrosters.
4) Headliner, floor mats
5) Front and rear exterior windshield wipers and washers. All windshield wipers are independently operated.

In addition to the fully enclosed cab, the operator shall also be protected by a Rollover Protective Structure (ROPS) in accordance with the State of California, Division of Industrial Safety, Construction Safety Orders, Title 8, Section 1596. A combination cab and safety guard approved by the Division of Industrial Safety will be acceptable. In general, the cab shall provide maximum operator protection and comfort.

2.13 **Controls:** Placement of hand and foot operator controls shall be conveniently located as to provide the operator maximum comfort and control during operation. The equipment controls shall have lock valves in each implement circuit to prevent cylinder drift. Controls to lift the blade shall be equipped with a float position. Factory installed electric over hydraulic joystick type controls may be provided in lieu of the conventional type grader controls (to include steering).

2.14 **Ripper:** The grader shall be equipped with the manufacturer's standard multi-shank, parallelogram type, rear mounted ripper, in lieu of the specified drawbar, to fit the model grader being supplied. The ripper shall be hydraulically raised and lowered, having a minimum penetration depth of 16 inches below ground level. The ripper shall be equipped with a minimum of five (5) removable shanks

capable of being locked into working position. Each shank shall be supplied with the necessary locking devices and replaceable shank tips.

2.15 **Air Conditioner:** An air conditioning system shall be installed with adequate capacity to reduce the operator environment temperature a minimum of 45 degrees F below the ambient for ambient temperatures of 86 degrees F to the highest ambient temperature at which the machine is designed to operate, The air conditioning system should not allow the operator environment humidity to exceed 70%. In addition to the air conditioner, the cab shall also be fully sealed and equipped with a pressurization and filtration system to prevent dust and other airborne particulate from entering the cab.

2.16 **Miscellaneous:** Miscellaneous components to be supplied and installed shall include, but not limited to the following:

2.16.1 Vandal protection package: The grader shall provide keyed protection from vandalism and theft. Vandal protection shall include operator's compartment, engine compartment, battery compartment, and all exposed fluid ports.

2.16.2 Transmission bottom guard.

2.16.3 Mirrors: ***OEM heated mirrors right and left exterior rear view mirrors shall be installed.***

2.16.4 Tie downs: The grader shall provide tie down capability at or near each of the outside four corners of the machine. Tie downs shall be compatible for use with ½ inch welded chain. Circular type tie downs shall have a minimum 3 inch diameter hole, however, "D" ring type tie downs are preferred. The tie downs shall be appropriately secured to and located on the grader to provide adequate holding strength during trailer transport of the machine.

2.16.5 Interior rear view mirror: An OEM interior rearview mirror(s) shall be installed.

2.16.6 Slow moving vehicle sign: Capable of being removed without tools (i.e. wing nuts, slotted post, etc.)

2.17 **Material:** Construction shall be of all new material free of rust and any defects. All components in the assembly shall be fabricated from a single piece of material. Material which is joined by welding or other means to form a single piece of stock is not acceptable. The finished product shall be free of dents and warpage. The use of any type of body filler is unacceptable. All bolts shall be Grade 5 or better and conform to SAE and ASTM standards. Bolt lengths shall be such that a minimum of two threads shall extend beyond the nut. Nuts shall be the locking type. Nuts and washers shall be compatible with the bolt(s) to which they are attached, as recommended by the fastener manufacturer and in accordance with SAE and ASTM standards. If requested, the supplier shall submit proof of fastener strengths.

2.18 **Metal Shaping:** All breaks shall be free of cracks. Radii shall be at least twice the thickness of the material or in accordance with the requirements established by ASTM for the particular material being formed, whichever is greater. All holes shall be round, of the proper dimension, perpendicular to the material they are produced in, and finished smooth. Oblong holes or holes drilled, bored, etc. at

angles are not acceptable. Holes and slots shall be drilled, punched, saw cut, plasma cut, or milled; torch cut is unacceptable. Sharp corners on all material shall be radiused to prevent personnel injury.

Welding: All welding shall comply with the requirements as represented in American Welding Society (AWS), D14.3-82, and American National Standard entitled "Specification for Welding Earthmoving and Construction Equipment."

All welds shall be continuous except as noted. Intermittent or spot welds shall be spaced and proportioned to provide ample strength for the material being welded. Weld sizes not indicated shall be equal to the thickness of the least of the joined plates.

All welds shall be properly fused, displaying proper penetration and a professional finish, and must meet the qualification requirements of applicable AWS specifications. Examples of unacceptable weldments are:

- **a.** Cracks
- **b.** Undercut
- **c.** Overlap
- **d.** Excessive Splatter
- **e.** Blow Holes
- **f.** Slag Entrapment

Any weld failing to comply with the AWS specification or failing to pass a quality assurance inspection performed by the State, will be corrected by the manufacturer, at their expense, and be corrected off State property. The State shall determine if a weld is acceptable or deficient.

Any deficient weld shall be corrected by a welder who is certified in accordance with the requirements as established by the American Welding Society (AWS). The welder shall have the proper certification documents indicating that he/she is qualified to perform the type, size, and position of the weld performed, with the welding process utilized, and on the material being welded. The supplier will be required to supply proof of current welding certifications for personnel performing any re-welding on the unit, upon request of the State whether written or verbal.

GRINDING OF WELDS must have prior approval of the State. Welds which have been ground without approval shall be subject to complete re-welding upon request, at no additional cost to the State.

All assembly dimensions and tolerances on drawings apply after welding. Excessive warpage of assembled parts is not acceptable. Weld symbols on drawings shall be interpreted per American National Standard Welding Symbols. In the event of the lack of a weld symbol, the best commercial practice shall prevail. The covering of welds with body fillers or similar materials is unacceptable.

2.19 **Paint:** The basic unit and the primary finish surfaces of any optional equipment shall be finish coated with lead-free paint in factory standard colors. The finish coat shall be free from runs, drips, sags, etc., and shall be evenly applied to provide a gloss finish. All paint and primer shall be lead free (300 ppm lead max).

2.20 **Noise:** Noise emitted by each unit delivered in compliance with these specifications shall comply with all California and Federal laws or regulations pertaining to maximum allowable emission of noise inside the operator's cab. The Time Weighted Average (TWA) noise dose shall not exceed 85 dB (A)

inside the cab as measured according to SAE J 1116 "Sound Measurement – Off Road Self Propelled Work Machines Operator Work Cycle."

The supplier may submit documentation to demonstrate compliance with this requirement.

2.21 **Lubrication:** The equipment shall be certified by the manufacturer for use with re-refined lubrication products. The re-refined lubrication products used by the State will meet or exceed all SAE, API, and NLGI specifications as required by the manufacturer.

2.22 **Safety:** The entire unit and accessories shall comply with the applicable provisions of the California Vehicle Code, the Safety Orders of the Division of Industrial Relations, and all Federal regulations in effect at the time of manufacture. The Specification Engineer shall make determinations where safety compliance is an issue.